

in Switzerland: the first, constructed over the Rhine, is formed in two spans, one of one hundred and seventy-two feet, the other one hundred and ninety-three, amounting to three hundred and sixty-five, supported by one pier, relative to which there has been numerous arguments.

The pier being the remains of an old bridge, and the artist having expressed his desire to cross the river in one span, or arch; but being over-ruled by the magistrates, who ordered him to give it a bearing on the pier, it is said he seemingly complied with their injunctions, but so contrived that no part should actually touch the pier; yet the pier is not in a line with the buttresses, but out of the rectilinear direction eight feet, forming an obtuse angle; and this circumstance is sufficient to convince me, that it must rest on the pier; therefore the greatest arch cannot be considered more than one hundred and ninety-three feet; yet certainly a considerable stretch of genius, and a strong instance of the curious fabric in which she frequently resides, the artist, Ubrick Grubenman, being a common carpenter, without the least knowledge of the principles of mechanics.

In a drawing which I have seen, the leading beam, composed of two pieces laid on each other, rises in a spring of about twenty feet over the pier, similar to the principles of a roof, and braced by perpendiculars and diagonals, in order that it may preserve its position, so that in some degree it operates like an arch, although in appearance the framing resembles a right line, the whole being roofed; a man on foot crossing this bridge will feel the whole fabric tremble, yet it is sufficient to support waggons heavily loaded, and bears every hardship usual to bridges.

The

The bridge of Wittengen, over the Limmat, is a span of two hundred and forty feet, raised about twenty feet from the water, and may be said to hang between two bows, the system by which it is supported being a strong bow or arch composed of eight timbers bolted on each other to create breadth, and back up against the weight, one of the bows being on each side, forming a spring of about twenty-five feet; the horse road is suspended between the two near the centre of the bend, this is also roofed, and by the mode of combining, has more simplicity and true mechanism than that of Schaffhausen, although constructed by the same self-taught artist.

CHAP.